

Application Number 10/606,041  
Amendment dated August 18, 2005  
Responsive to Office Action mailed May 25, 2005

### AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

#### **Listing of Claims:**

1. (Currently amended) A method comprising:

synchronizing a magnetic drive to a patterned magnetic medium based on detection of a set of first surface variations in the patterned magnetic medium; and

selectively applying magnetic fields to a second set of surface variations of the patterned magnetic medium to encode data on the patterned magnetic medium, wherein a timing of the selective application of the magnetic fields is defined by the synchronization of the magnetic drive to the patterned magnetic medium, wherein the first and second sets of surface variations comprise first and second protrusions respectively, and selectively applying magnetic fields to the second set of surface variations comprises applying magnetic fields to the second protrusions and not applying magnetic fields to areas between the second protrusions.

2. (Canceled)

3. (Currently amended) A method comprising:

synchronizing a magnetic drive to a patterned magnetic medium based on detection of a set of first surface variations in the patterned magnetic medium; and

selectively applying magnetic fields to a second set of surface variations of the patterned magnetic medium to encode data on the patterned magnetic medium, wherein a timing of the selective application of the magnetic fields is defined by the synchronization of the magnetic drive to the patterned magnetic medium.

The method of claim 1, further comprising conditioning the magnetic medium prior to synchronizing the magnetic drive to magnetically expose the first and second sets of surface variations relative to areas between the surface variations in the first set and areas between the surface variations in the second set.

Application Number 10/606,041  
Amendment dated August 18, 2005  
Responsive to Office Action mailed May 25, 2005

4. (Currently amended) A method comprising:

synchronizing a magnetic drive to a patterned magnetic medium based on detection of a set of first surface variations in the patterned magnetic medium; and

selectively applying magnetic fields to a second set of surface variations of the patterned magnetic medium to encode data on the patterned magnetic medium, wherein a timing of the selective application of the magnetic fields is defined by the synchronization of the magnetic drive to the patterned magnetic medium. ~~The method of claim 1, wherein the patterned magnetic medium exhibits perpendicular magnetic anisotropy, and at least some of the surface variations in the first and second sets define widths of less than approximately 5.0 microns.~~

5. (Original) The method of claim 4, wherein at least some of the surface variations in the first and second sets define widths of less than approximately 1.0 micron.

6. (Currently amended) A method comprising:

synchronizing a magnetic drive to a patterned magnetic medium based on detection of a set of first surface variations in the patterned magnetic medium;

selectively applying magnetic fields to a second set of surface variations of the patterned magnetic medium to encode data on the patterned magnetic medium, wherein a timing of the selective application of the magnetic fields is defined by the synchronization of the magnetic drive to the patterned magnetic medium; and

~~The method of claim 1, further comprising magnetically detecting the set of first surface variations relative to areas between the surface variations in the first set.~~

Application Number 10/606,041  
Amendment dated August 18, 2005  
Responsive to Office Action mailed May 25, 2005

7. (Currently amended) A method comprising:

synchronizing a magnetic drive to a patterned magnetic medium based on detection of a set of first surface variations in the patterned magnetic medium; and  
selectively applying magnetic fields to a second set of surface variations of the patterned magnetic medium to encode data on the patterned magnetic medium, wherein a timing of the selective application of the magnetic fields is defined by the synchronization of the magnetic drive to the patterned magnetic medium. The method of claim 1, wherein synchronizing the magnetic drive includes identifying a variable frequency oscillator (VFO) signal in the set of first surface variations.

8 - 15. (Canceled)

16. (Currently amended) A system comprising:

a patterned magnetic recording medium including a substrate, and a magnetic recording layer formed over the substrate, the magnetic recording layer including a first set of surface variations and a second set of surface variations; and

a magnetic drive that synchronizes to the patterned magnetic medium based on detection of the set of first surface variations, and selectively applies magnetic fields to the second set of surface variations to encode data on the patterned magnetic medium, wherein a timing of the selective application of the magnetic fields is defined by the synchronization of the magnetic drive to the patterned magnetic medium, wherein the magnetic drive includes a magnetic head positioned relative to the patterned magnetic recording medium and a controller to control application of magnetic fields by the magnetic head, and wherein the magnetic head defines a gap less than approximately 50% of a width associated with the surface variations in the second set.

17 - 18. (Canceled)

Application Number 10/606,041  
Amendment dated August 18, 2005  
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19. (Currently amended) A system comprising:

a patterned magnetic recording medium including a substrate, and a magnetic recording layer formed over the substrate, the magnetic recording layer including a first set of surface variations and a second set of surface variations; and

a magnetic drive that synchronizes to the patterned magnetic medium based on detection of the set of first surface variations, and selectively applies magnetic fields to the second set of surface variations to encode data on the patterned magnetic medium, wherein a timing of the selective application of the magnetic fields is defined by the synchronization of the magnetic drive to the patterned magnetic medium. The system of claim 16, wherein the first and second sets of surface variations comprise first and second protrusions respectively, and the magnetic drive selectively applies magnetic fields to the second set of surface variations by applying magnetic fields to the second protrusions and not applying magnetic fields to areas between the second protrusions.

20. (Currently amended) A system comprising:

a patterned magnetic recording medium including a substrate, and a magnetic recording layer formed over the substrate, the magnetic recording layer including a first set of surface variations and a second set of surface variations; and

a magnetic drive that synchronizes to the patterned magnetic medium based on detection of the set of first surface variations, and selectively applies magnetic fields to the second set of surface variations to encode data on the patterned magnetic medium, wherein a timing of the selective application of the magnetic fields is defined by the synchronization of the magnetic drive to the patterned magnetic medium. The system of claim 16, wherein the patterned magnetic recording medium exhibits perpendicular magnetic anisotropy and at least some of the surface variations in the first and second sets define widths of less than approximately 5.0 microns.